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Address for Correspondence: Ali Hosseinsabet, MD
Tehran Heart Center, Karegar Shomali Avenue, Tehran-*I.R.Iran*
Phone: +98 218 802 97 31 Fax: +98 218 802 97 31
E-mail: Ali_Hosseinsabet@yahoo.com

Obstructive sleep apnea and cardiovascular disease: Is mean platelet volume one of the links?

To the Editor,

We read with great interest the excellent review entitled "Obstructive sleep apnea and its effects on cardiovascular diseases: a narrative review" by Rivas et al. (1) on the cardiovascular comorbidities of patients with obstructive sleep apnea (OSA) published. Indeed, it is increasingly being appreciated that patients with OSA are at a higher risk of coronary artery disease, congestive heart failure, stroke, and atrial fibrillation. Treatment with continuous positive airway pressure (CPAP) reduces these comorbidities (1).

A novel important, though less widely used, marker of the severity of OSA is mean platelet volume (MPV), as shown by Varol et al. (2, 3) and us (4). Again, CPAP treatment has been reported to reduce MPV (3). Given its role as a marker of vascular disease and a predictor of acute vascular events (5), it appears that MPV also links OSA with cardiovascular disease. Specifically, in patients with OSA, MPV is also associated with atrial fibrillation (5).

In conclusion, it is now established that OSA poses patients at an increased risk of cardiovascular disease (1). MPV may prove useful as a marker of the latter in patients with OSA (4, 5); therefore, it should be more widely utilized for this purpose.

Nikolaos Papanas, Dimitri P. Mikhailidis[1], Paschalis Steiropoulos*
Diabetes Center Second Department of Internal Medicine, and *Pneumonology, Medical School, Democritus University of Thrace, Alexandroupolis-*Greece*
[1]Department of Clinical Biochemistry (Vascular Disease Prevention Clinics), Royal Free Hospital campus, University College London Medical School, University College London (UCL), London-*UK*

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Address for Correspondence: Nikolaos Papanas, MD
Diabetes Center, Second Department of Internal Medicine
Democritus University of Thrace, 68100 Alexandroupolis-*Greece*
Fax: +302551074723 E-mail: papanasnikos@yahoo.gr

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Author`s Reply

To the Editor,

We appreciate Dr. Nena's comments about our review article entitled "Obstructive sleep apnea and its effects on cardiovascular diseases: a narrative review," published in Anatol J Cardiol 2015; 15: 944-50, and her suggestion that mean platelet volume (MPV) may have prognostic importance as a risk factor for cardiovascular events and therapeutic importance as an indicator of a response to CPAP management in patients with obstructive sleep apnea (OSA) (1). MPV is a marker for thrombocyte activation. Larger platelets contain more granules and thromboxane A_2 and express more glycoprotein receptors. Therefore, these platelets aggregate more quickly and adhere more strongly to collagen, and this potentially leads to either an increased frequency or severity of thromboembolic events. Because patients with OSA have an increased frequency of atrial fibrillation and stroke and because OSA has adverse effects on outcomes in patients with other cardiovascular disorders, measuring MPV may help classify patients into risk categories and identify patients who might need additional therapy.

One important issue in studies using MPV as an indicator of vascular events is whether to consider MPV as a continuous variable or as a categorical variable, which is of interest only if it is above the upper limit of normal or some other critical value based on outcome studies. Another important issue is the study population. Is it more important to study patients with underlying risk factors for cardiovascular disease or to study patients without any obvious evidence of cardiovascular disease? Karakaş et al. (2) analyzed MPV in controls and in patients with OSA with mild, moderate, and severe increases in apnea-hypopnea index (AHI). They found that it was significantly higher in patients with severe OSA than in control subjects. However, the reported values appeared to be within the normal range, and absolute differences were small (8.6 versus 7.8 femtoliters). They did find significant correlations

between MPV and AHI and minimum O_2 saturation. Nena et al. (3) studied 610 non-diabetic subjects with suspected OSA. MPV (12.1 femtoliters) was significantly higher in patients with severe OSA defined by an AHI greater than 30 events per hour than in controls (9.8 femtoliters). They found significant correlations between MPV and AHI and between MPV and the percent of time the O_2 saturations were below 90%. This study suggested that there are significant correlations between MPV and important variables in patients with severe OSA. Varol et al. (4) studied 31 patients with severe OSA and measured MPV before and after treatment with CPAP for 6 months. The median MPV was significantly higher in patients with severe OSA than in control subjects, and there was a significant reduction in this volume after 6 months of CPAP therapy.

In our view, MPV is an easily available laboratory test that may identify patients with an increased risk for cardiovascular events and may represent a response parameter to monitor during treatment of these patients. It seems important to develop large prospective studies on its utility in patients with OSA.

Marcella Rivas, Atul Ratra, Kenneth Nugent
Department of Internal Medicine, Texas Tech University health Sciences Center, Lubbock-TX-*USA*

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Address for Correspondence: Kenneth Nugent, MD
3601 4th Street, Lubbock, TX 79430-*USA*
E-mail: kenneth.nugent@ttuhsc.edu

The role of platelet-lymphocyte ratio in the severity of coronary artery disease assessed by the angiographic Gensini score

To the Editor,

I am grateful to have read with great interest the article entitled "The association between platelet-lymphocyte ratio and coronary artery disease severity" by Yüksel et al. (1), published in Anatol J Cardiol 2015; 15: 640-7. In this well-presented study, the authors aimed that the platelet-lymphocyte ratio (PLR) was associated with the severity of coronary artery disease, assessed by the Gensini score, because a high PLR was shown to be closely related with inflammation and atherosclerosis. They found that a high PLR was significantly and independently related with the severity of coronary artery disease.

Prior studies investigated that PLR, a combination of both platelet and lymphocyte counts, is a novel inflammatory marker and predictor of adverse cardiovascular outcomes (2–6). Yüksel et al. (1) showed that PLR was significantly higher in the group of severe atherosclerosis than in the other control and mild atherosclerosis groups. As known, the mild atherosclerosis group has a more severe inflammation than the control group; however, there was no difference between the mild atherosclerosis and control groups (p=0.729).

In conclusion, according to these results, it was not clear to highlight the pathogenesis role of PLR in the severity of coronary artery disease. According to me, further larger studies are needed to show and clarify this situation.

Harun Kundi
Department of Cardiology, Ankara Numune Education and Research Hospital, Ankara-*Turkey*

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Address for Correspondence: Dr. Harun Kundi
Ankara Numune Eğitim ve Araştırma Hastanesi
Kardiyoloji Bölümü, Ankara-*Türkiye*
E-mail: harunkundi@hotmail.com

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